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MMT-008 (P)

00280

M.Sc. (MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE) M.Sc. (MACS)

Term-End Practical Examination

June, 2016

MMT-008 (P) : PROBABILITY AND STATISTICS

Time : 1½ hours *Maximum Marks : 40*

Note : *There are two questions in this paper worth 30 marks. Remaining 10 marks are for the viva-voce.*

1. Let $X \sim N_p(\mu, \Sigma)$. Write a programme in 'C' language to obtain the distribution of $Y = CX$, where **20**

$$C = \begin{bmatrix} a_1 & a_2 & \dots a_p \\ b_1 & b_2 & \dots b_p \end{bmatrix}$$

Use the programme to find the distribution of Y,

when $C = \begin{bmatrix} 2 & 1 & 2 \\ 1 & -1 & 1 \end{bmatrix}$, $\mu = \begin{bmatrix} 4 \\ -2 \\ 6 \end{bmatrix}$ and $\Sigma = \begin{bmatrix} 6 & 1 & 2 \\ 1 & 8 & 4 \\ 2 & 4 & 9 \end{bmatrix}$.

2. Consider the mean vectors $\mu_x = \begin{bmatrix} 3 \\ -2 \end{bmatrix}$ and $\mu_y = 4$, and the covariance matrices of x_1, x_2 and y are $\Sigma_{xx} = \begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix}$, $\sigma_{yy} = 9$ and $\sigma_{xy} = \begin{bmatrix} 3 \\ 1 \end{bmatrix}$. **10**

Write a programme in 'C' language to fit the equation $y = b_0 + b_1 x_1 + b_2 x_2$ as best linear equation.